Editorial

Vestibular stimulation for stress management: Attributing the vestibular system networks in potentially regulating physiology beyond body movements and balance

The vestibular system is a very unique sensory system, which integrates with several other sensory and motor pathways to precisely regulate body movement and balance. This uniqueness is achieved through the vestibular nuclei which are anatomically and functionally organized into four bilateral subnuclei located in the brainstem region. Inputs into these nuclei are provided by the vestibular organ bilaterally located in the inner ear through the vestibular nerve component of the eighth cranial nerve. The vestibular organ is comprised fluid-filled semicircular canals and two otolith organs (utricle and saccule). The role of vestibular organ in regulating body movement and balance is well known, and techniques to stimulate the vestibular organs as a clinical intervention to correct body movement and balance disorders are actively researched. Several neural networks project from the vestibular nuclei to different regions of the cerebral cortex, cerebellum, and spinal cord, which in recent years have been reported to have a higher degree of neuroplasticity. These wider vestibular system networks with significant neuroplasticity in recent years are linked with several functional attributes beyond the classical role of vestibular system in regulating body movement and balance. One such functional attribute has been in the area of stress management. While the molecular pathways linking vestibular stimulation and its potential in stress management await research-based evidence, the functional outcomes are well evident and reported by several studies. It is likely that the vestibular system networks do relay through several other autonomic function regulatory centers, including the reticular activating system, thalamus, hypothalamus, and/or the limbic system in influencing the body stress status. It will be interesting to understand these complex molecular pathways to refine the adaptability of vestibular stimulation approach in the clinical management of diseases associated with stress. Highlighting these concepts is two articles published in this issue. One of the articles reviews the pathways, by which stimulating vestibular system can regulate the limbic system networks. While the other article describes the potential of vestibular stimulation as an effective nonpharmacological approach in management of premenstrual syndrome.

Personalization of therapeutics is gaining increasing momentum, which is aimed at achieving effective and efficient clinical outcomes. In this issue, we have included an article, which described success of adult-to-adult living donor liver transplantation procedures by adopting personalized surgical approach. This article highlights individual operative techniques where personalization becomes necessary to improve the efficiency of transplant success. Closely related to this is describing the Portsmouth Physiological and Operative Severity Score for the Enumeration of Mortality and Morbidity, which accurately predicts both mortality and morbidity in patients undergoing major surgical procedures. Such personalization scoring system will greatly help the postoperative care staff to identifying patients who required preferential attention for effective clinical management. Another article on the surgical topic compares dynamic hip screw and proximal femur locking compression plate (PFLCP) techniques for fixing stable intertrochanteric fractures. Although both

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procedures lead to excellent functional outcomes, the nonunion of fracture was more common with PFLCP. We also have an article auditing the ventilator-associated pneumonia (VAP) incidence in Intensive Care Units as apparently, VAP is the most frequent Intensive Care Unit acquired infection. This study reported a high incidence of multidrug resistance pathogens in late-onset VAP. The Gram-negative organisms, *Klebsiella*, *Pseudomonas, Escherichia Coli,* and *Acinetobacter,* were the most commonly isolated organisms and very associated with high mortality rates. The increasing prevalence of such difficult to manage microorganisms together with the progressively increasing antimicrobial resistance is of enormous clinical concern and probably will remain a major clinical challenge to be addressed on priority. The microbial species are not only of concerns from systemic physiology but also as well with dental health, among which dental caries is of common concern. In this issue, we have an interesting article looking at the potential of xylitol in preventing dental caries. One of the studies in this issue reports design and synthesis of novel hydroxamate compounds which are structurally designed as inhibitors of histone deacetylase enzyme. Interestingly, these compounds enhanced the activity of fluconazole against *Candida albicans*.

While innovative medicines are one aspect of the pharmaceutical's revenue, the generic medicines are the other which offers continued revenue stream. The price wars between generic versus branded medicines should also consider the quality of the product as an important parameter, which can be further refined by national regulations. In this issue, a study looks at the impact of the novel policy implemented in the West Bengal state of India to promote generic medicines use and make life-saving medicine affordable to general population. Such policies should be a national priority to all developing and underdeveloped nations, which should aim to make access to essential medicines affordable and probably a fundamental right. The innovations in medicines should run parallel to the innovations in diagnostics. One study in this issue reports the utility of C-reactive protein, E-selectin, procalcitonin, interleukins-6, and tumor necrosis factor-α in improving the diagnostic accuracy of neonatal sepsis. Neonatal sepsis is often difficult to treat due to the delay in diagnosing the condition. Since commercial kits to evaluate these markers are already available, we hope adopting them to the clinical practice will be valuable in early identification of neonatal sepsis and achieve effective clinical management. Another study in this issue reports population profiling based on Rhesus antigens, which was performed in Riyadh, a Saudi Arabian city. Such profiling has tremendous medial utility specifically in the area of population genetic study and transfusion medicine practice. It will be interesting to see if such profiling will be valuable in personalized medicine approach. With the advancement in digital information availability, our patients have access to enormous medical information. Hence, currently, clinical practices should additionally look into patient's nonmedical needs. Addressing this concept is one study reporting an in-depth understanding of patients experience during maxillofacial trauma from road traffic accidents and its treatment. Such data are valuable in tailoring the emergency medicine and trauma centers approach to optimize the needs of patients experiencing trauma from road traffic accidents and provide personalized care, specifically in the area of emotional, physical, personal, and psychological support and care.

Incidence of kidney diseases is alarmingly increasing among diabetic patients. One of the studies in this issue reports lower capillary blood glucose levels (36% drop in blood glucose levels at 2 h postdialysis) among diabetic patients with end-stage renal disease. This has to be addressed clinically to prevent hypoglycemic episodes by reducing exogenous insulin administration on the day of dialysis. Another study also reports increasing incidence of osteoporosis among type 2 diabetes patients despite similar bone mineral density. The possibility of any relationship between osteoporosis and kidney diseases among diabetic patient will be an interesting study. One of the studies reports spirometry parameters among drug abusers. In this study, although the spirometry observations were similar among drug users and general population, a correlation was observed between declined spirometry parameter (forced expiratory volume 1/forced vital capacity) with the duration of cannabis inhalation, methamphetamine inhalation, injected heroin, age, period of smoking, and amount cigarette consumed. We have included two studies on stroke. One of these studies reports the potential of eclectic treatment in improving motor impairment following stroke. Eclectic treatment method significantly improved the upper extremity functional recovery for motor rehabilitation following stroke. Oxidative stress plays a major role in the etiopathogenesis of acute ischemic stroke patients, and the deranged oxidant-antioxidant balance further contributes to its severity. In this study, the author studied the ischemia-modified albumin and malondialdehyde levels, which were significantly increased in stroke patients compared to controls. Despite several studies linking oxidative stress with stroke outcomes, this concept has not transformed into clinical practice, which necessitates the need to introspect this concept. Similarly, another study reports that systemic antioxidant therapy (systemic lycopene supplementation) along with scaling and root planing was very effective in improving the clinical parameters in chronic periodontitis patients. The beneficial effects were maintained up to 4 months

after discontinuation of lycopene treatment. Hope this study will lead to including such beneficial antioxidants in our toothpastes for wider community benefits. We have included a study which looks at using electrocardiogram as a tool to risk profile patients suffering from myocardial infarction. In this study, lead aVR ST deviation and lead V7 ST deviation helped to prognosticate the ST-elevation myocardial infarction patients as high risk and those with aVR ST depression had higher mortality compared to aVR ST elevation because of larger myocardial involvement.

Effective and reliable analysis of diseases prevalence is necessary to adopt optimal treatment strategies. A study in this issue reports that tuberculosis is underreported in River Nile State, North Sudan, and treatment outcomes are suboptimal probably as a consequence to this underreporting. Hence, strategies to identify the active case detection in any population are essential. Similarly, another study reports sociodemographic characteristics and clinical profile of women presenting with cervical carcinoma and identifies factors associated with the timing of presentation and prognosis, in Mangalore, Karnataka state in India. Surprisingly higher proportion of late presentation was observed, which necessitates the need for developing and implementing efficient screening cum prevention program for cervical cancer. These public health measures must run in parallel to funding research to identify early risk factors for cervical cancer.

We have also included two case reports in this issue. One of the reasons for reducing the number of case reports is we are preferring them to included in our another flagship journal, i.e. BEMS reports (http://www.bemsreports.org/). The first case report describes amiodarone-induced pleural effusion without associated lung parenchymal involvement. While the second case report describes bilateral lower limb ischemia in a patient undergoing right transfemoral iliac angioplasty with femoropopliteal bypass, which was successfully treated with stent implantation with the kissing balloon technique.

I hope you continue to enjoy and gain from the enormous knowledge presented in this issue and on behalf of the entire team of JNSBM I wish you all a happy and prosperous new year ahead.

Sincerely,

Arun H. S. Kumar

Editor in Chief, Journal of Natural Science, Biology and Medicine,
University College Dublin, Dublin, Ireland
E-mail: editor@jnsbm.org